
Space Weather Forecast

Issued on Saturday, 08 June 2024 at 00:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Isolated Moderate-class flares remain likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the last 24 hours with two Moderate-class flares, one from a complex bipolar active region in the southwest and the other from a bipolar region near the southeast limb.

There are currently nine numbered visible sunspot regions. The aforementioned complex region in the southwest, has shown some further growth in recent imagery. Three other smaller and less active regions in the western disc have shown slight decay. The other spot group already mentioned near the southeast limb, remains difficult to fully analyse due to the oblique view angle, however it does look to have some modestly complex magnetic structure at present. Remaining regions are smaller, simpler and relatively inactive at present.

There were no Earth-directed coronal mass ejections (CMEs) observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were at background levels, 350-400 km/s, until around 07/1050 UTC when increasing to 450-514km/s thereafter. The Interplanetary Magnetic Field (IMF) was mostly weak, but became moderate for a time between 07/1055-1430 UTC. The important north-south component was often weakly negative (southward) until 07/1055 UTC, when it became persistently moderate negative until 07/1405 UTC. The above parameters appear to indicate the arrival and passage of an un-forecast CME.

Resultant geomagnetic activity increased from Quiet to Unsettled (Kp 1-3) to G2/Moderate storm (Kp 6) levels for a time 07/1200-1800 UTC, before returning to Unsettled levels thereafter (Kp 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are considered Likely, along with a Slight Chance of a Strong-class flare, these most probably from the more active sunspot groups in the southwest and southeast.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed coronal mass ejections forecast.

The current slightly elevated solar winds, following the CME passage, should slowly ease on day 1 (8 June). However, there is another potential enhancement from the elongated and rather narrow coronal hole in the northwest disc, which could bring renewed slightly elevated or possibly elevated wind speeds for a time later on day 1 (08 Jun), or perhaps more likely into day 2 (09 Jun).
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2 (09 Jun).

Generally Quiet to Unsettled geomagnetic activity is expected on day 1 (08 June), but with the potential for some short-lived Active conditions from any coronal hole fast wind onset, and just a slight chance of isolated G1/Minor Storm. This would be most likely either late on day 1, or during day 2 (09 June). Thereafter, a return to mainly Quiet conditions is currently anticipated.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to persist at background levels, with a slight chance of rising above the S1/Minor Radiation Storm threshold throughout in association with any notable flaring that occurs, most likely from the active sunspot group in the southwest..

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	Yes	5	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	70	70	70	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						